

Amendment to the Claims:

1. (Currently Amended) A tracking method for tracking a sensor in a capture range in a field generated by a field generator, the method comprising the steps of:

(a) generating a field by means of the field generator for defining the capture range;

(b) identifying a region of interest including the sensor within the capture range;

(c) narrowing the capture range by narrowing the field by means of the field generator;

(d) iteratively repeating steps (a) to (c).

2. (Original) The method of claim 1, wherein the field generator is a magnetic field generator and emits a magnetic field, wherein the magnetic field generator comprises at least one coil, further comprising the step of: adjusting a position of the at least one coil in the field generator for narrowing the capture range such that at least one of a size and shape of the capture range is reduced.

3. (Original) The method of claim 1, further comprising the step of displacing the field generator for narrowing the capture range.

4. (Original) The method of claim 1, wherein the field generator is a magnetic field generator and emits a magnetic field, wherein the magnetic field generator comprises at least one coil, further comprising the step of: adjusting an orientation of the at least one coil in the field generator for narrowing the capture range such that a location of the capture range is adjusted.

5. (Currently Amended) A tracking system for tracking a sensor in a capture range in a field generated by a field generator, wherein:

the field generator is adapted to iteratively adjusts at least one of a size, direction and orientation of the capture range to a level where the sensor is located

with an iteratively improved accuracy and resolution until a preselected accuracy and resolution are achieved; and

the field generator focuses, narrows, and centers the capture range to be focused on a region of interest.

6. (Original) The tracking system of claim 5, wherein the field generator is a magnetic field generator and emits a magnetic field; wherein the magnetic field generator comprises at least one coil; and wherein a position of the at least one coil in the field generator is adjustable for narrowing the capture range such that at least one of a size and shape of the capture range is reduced.

7. (Original) The tracking system of claim 5, wherein the field generator is movable for narrowing the capture range.

8. (Original) The tracking system of claim 5, wherein the field generator is a magnetic field generator and emits a magnetic field; wherein the magnetic field generator comprises at least one coil; and wherein an orientation of the at least one coil in the field generator is adjustable for narrowing the capture range such that a location of the capture range is adjusted.

9. (Currently Amended) A computer program product comprising computer program code means to perform the following steps when the computer program is executed on a computerized tracking system:

(a) generating a field by means of the field generator for defining the capture range;

(b) identifying a region of interest including the sensor within the capture range;

(c) narrowing and focusing the capture range by narrowing the field by means of the field generator to the region of interest and improving a resolution with which a location of the region of interest can be resolved;

(d) iteratively repeating steps (a) to (c) until the location of the region of interest is resolved with a selected resolution.

10. (New) The method of claim 1, wherein the field generator is a magnetic field generator and emits a magnetic field, the magnetic field generator including:

six differential coils which form the edges of a tetrahedron shaped assembly; and

each differential coil includes two coils of opposite polarization.

11. (New) The method of claim 1, wherein the sensor includes:

a miniaturized induction coil;

outer dimensions of about 8mm by 0.8mm diameter; and

a thin film of synthetic material coating.

12. (New) The method of claim 1, wherein the field generator is a magnetic field generator and emits a magnetic field, the field generator including:

two coils each mounted for rotation relative to a corresponding spaced axis; and,

actuators which rotate each of the coils relative to the corresponding axis.

13. (New) The method of claim 1, further including the step of determining between steps (c) and (d) whether the accuracy and resolution provided within the capture range meets a preselected threshold.

14. (New) The method of claim 1, wherein step (c) further includes improving a resolution with which the region of interest is identified as the capture ratio is narrowed.

15. (New) The tracking system of claim 5, wherein the field generator includes:

a plurality of differential coil assemblies, each differential coil assembly including a pair of opposite polarity coils with a common axis.

16. (New) The tracking system of claim 15, wherein the sensor includes:

an induction coil coated with a thin film of synthetic material.

17. (New) The tracking system of claim 5, wherein the field generator includes:

a first coil mounted to pivot about a first axis;

a second coil mounted to pivot about a second axis, the second axis being parallel to the first;

a plurality of actuators which rotate the first and second coils about the first and second axes, respectively;

a control which controls the actuators to adjust an amount of rotation of the first and second coils to focus, center, and narrow the capture range.